Historic, Archive Document

Do not assume content reflects current
scientific knowledge, policies, or practices.

Reserve
280.39
Ag842

-

PROGRESS REPORT

of the

MARKETING ECONOMICS DIVISION

ECONOMIC RESEARCH SERVICE

U. S. DEPT. OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY
APR 22 1969
CURRENT SERIAL RECORDS

This progress report includes a summary of the current research of the Division and a preliminary report of progress made during the preceding year. It is primarily a tool for use of scientists and administrators in program coordination, development, and evaluation; and for use of advisory committees in program review and development of recommendations for future research programs.

The summaries of progress on USDA and cooperative research include some tentative results that have not been tested sufficiently to justify general release. Such findings, when adequately confirmed, will be released promptly through established channels. Because of this, the report is not intended for publication and should not be referred to in literature citations. Copies are distributed only to members of Department staff, advisory committee members and others having a special interest in the development of public agricultural research programs.

This report also includes a list of publications reporting results of USDA and cooperative research issued between July 1, 1967, and September 30, 1968. Current agricultural research findings are also published in the monthly USDA publication, Farm Index. This progress report was compiled in the Marketing Economics Division, Economic Research Service, U.S. Department of Agriculture, Washington, D.C.

UNITED STATES DEPARTMENT OF AGRICULTURE
Washington, D.C.
October 1, 1968

TABLE OF CONTENTS

	Page
Introduction	ii
USDA and Cooperative Program	xiv
RPA 501 - Improvement of Grades and Standards	1
Problems and Objectives	1
Progress - USDA and Cooperative Programs	1
RPA's 503, 504, 505 - Physical and Economic Efficiency in Marketing (503, Fruits and Vegetables; 504, Field Crops; 505, Livestock)	3
Problems and Objectives	3
Progress - USDA and Cooperative Programs (503, Fruits and Vegetables)	3
Progress - USDA and Cooperative Programs (504, Field Crops)	4
Progress - USDA and Cooperative Programs (505, Livestock)	7
RPA 506 - Supply, Demand and Price Analysis	11
Problem and Objectives	11
Progress - USDA and Cooperative Programs	11
RPA 507 - Competitive Interrelationships in Agriculture	12
Problems and Objectives	12
Progress - USDA and Cooperative Programs	12
RPA 508 - Development of Domestic Markets for Farm Products	16
Problems and Objectives	16
Progress - USDA and Cooperative Programs	16
RPA 509 - Marketing Firm and System Efficiency	20
Problems and Objectives	20
Progress - USDA and Cooperative Programs	20
RPA 510 - Farmer Bargaining Power	25
Problems and Objectives	25
Progress - USDA and Cooperative Programs	25
RPA 808 - Government Programs to Balance Farm Output and Market Demand	27
Problems and Objectives	27
Progress - USDA and Cooperative Programs	27
Publications--USDA and Cooperative Programs	29

INTRODUCTION

The Marketing Economics Division conducts a program of economic research relating to the marketing of farm production inputs and the nation's output of food and fiber. The major objective of the research program is to evaluate the performance of a constantly changing marketing system. Performance is measured in terms of the consequences or benefits that flow from alternative methods of performing the various marketing functions. An integral part of the research effort is to define the dimensions of performance and to devise better measures of these dimensions.

The research program is built around questions arising from changes in the marketing system, the forces causing these changes, and the effects of change in the economic position of all participants including farmers, marketing firms, and consumers. Marketing is viewed as a dynamic process even though comparative static analyses must often be employed to understand the process of change.

To reach the objective of an evaluation of market performance, it is necessary to isolate and define problem areas within the overall objective. Specific objectives and progress of the research program are reported by the Research Problem Areas as outlined by a joint USDA-SAES task force to conduct a long range study of agricultural research.

The objectives of some of the Research Problem Areas deal with specific agricultural commodities while the objectives of others have a functional or cross-commodity orientation. The Division is organized to conduct research of both types. Of the five branches in the Division, three conduct studies relating to specific commodities and two carry out functionally oriented research.

Most of the professional staff is located in Washington, D.C. However, a limited number of field stations are located throughout the United States, a major part of them being at land-grant colleges and universities. Also, economists are located at each of the five USDA Utilization and Development Laboratories. Research is often conducted in cooperation with other USDA agencies, other Federal agencies and State Agricultural Experiment Stations.

Following are examples of research accomplishments during the reporting period:

Marketing Bill

Expenditures by civilian consumers in this country for domestic, farm-oriented foods amounted to $85.0 billion in 1967--2.7 percent more than in 1966. Because returns to farmers from these products declined, the rise in consumer expenditures was smaller than the average annual increase of 3.8 percent during 1958-67. The bill for marketing these products totaled $57.6 billion--5 percent more than in 1966. This increase compared with an average annual increase of 4.2 percent in 1958-67. Returns to farmers from these products amounted to $27.4 billion--down 2.5 percent from 1966. This was the

first decline since 1959. An increase in the volume of products marketed did not make up for decreases in prices. Consumer expenditures for these foods in 1968 probably will be higher than in 1967; both the marketing bill and returns to farmers will be up.

Work has been started to more clearly delineate certain major components of the marketing bill which affect the cost of marketing and the prices consumers pay for food products. Total delivered costs of packaging materials for food products have been estimated at $4.6 billion in 1958. When the Office of Business Economics, Department of Commerce, input-output data become available, costs for 1963 will be calculated. Trend factors, as well as costs at the various levels of marketing, will be established in order to update cost estimates and maintain a continuous series. From this work, it is hoped that 1968 Census of Manufacturers data can be used on a current basis to appraise this major element of marketing costs. Cost of advertising and promotion will also be appraised for impact on marketing costs.

Food Service Industry

Comprehensive data on the size and nature of the away-from-home market for food have been published. Release of these data marks the first time information essential to evaluating the demands and requirements of this market and for making marketing decisions has been available to industry and the government. All indications point to a widespread use of the data by businesses involved in the away-from-home market and its application in firm marketing operations.

An examination of the data obtained indicates that the food service industry comprises a highly diversified group of eating places serving an extremely complex consumer market. Differences exist among establishments by type of business, type of food service offered and size of operation. Separate eating places comprise the large segment of this industry with more establishments, more individual consumer transactions, and larger total sales than any other kind of business. About 80 percent of all separate eating places are located in cities, indicating a lag in response to suburban population growth.

Many changes appear to be in prospect for the food service industry. One of these is continued growth of the industry because of population increases, rising family incomes, more leisure time and travel and an increased proportion of working wives. An indication of the growth occurring in this industry is found in the sales performance of establishments that are primarily eating places. In 1965 this segment of the industry accounted for almost 50 percent of the total value of food consumed away from home. Sales of this segment rose over 58 percent between 1960 and 1966 and in constant dollars, 36 percent. During the same period, grocery store sales increased only 14 percent in constant dollars. Further research is being planned to discover and evaluate trends in this industry, identify factors influencing its growth and determine the impact of changes in this market on producer returns and consumer food costs.

Special tabulations of the data have been made to identify sources of food supply for this market. Research is underway and additional effort is planned

to analyze the survey data to determine economic relations such as effect of type of food service on food costs and labor requirement, size of business and procurement practices and size and type of operation and use of food preparation equipment. A second phase of the survey now underway is concentrating on the detailed food requirements of this market and its supply sources for specific food groups.

Egg Pricing

The program of research on the present egg pricing system, possible modifications, and alternative pricing systems is nearing completion. The findings based on the work of ERS, C&MS, and 13 cooperating State Agricultural Experiment Stations will furnish a basis for industry and governmental action to evolve a better system.

Despite the fact that seasonal variation in egg prices has been reduced as a result of reduced seasonality of egg production substantial, sometimes drastic, short-run changes continue to occur in the industry. These short-run changes have led to criticism of the present egg pricing system. Research was undertaken to determine the causes of short-run price changes and to consider and evaluate alternative methods or systems of pricing.

Among the possible alternative pricing systems studied were committee pricing, decentralized pricing, pricing off previous periods reported, prices paid and received, futures-oriented pricing, administered pricing, and market order pricing.

Representatives of ERS, C&MS, and six experiment stations participated in a committee pricing experiment from April 1967 through April 1968. Prices were estimated for the following week at selected points, levels of trading, and for several grades and sizes of eggs. In most areas, estimated prices fluctuated less than reported market values, but the committee agreed additional market information would be required for the most effective use of this technique.

Work in New England, while suggesting the present system in that area lacks continuity and definition, does suggest a regional system can aid equilibrium pricing, though it should recognize national market influence. While some decentralization of pricing thus appears desirable under any approach to more adequately reflect regional supply and demand conditions, full decentralization in the sense it prevails on livestock appears unlikely. The egg market does tend to be national and industry characteristics are thus not consistent with a system of discreet "egg sheds."

Using prices from previous periods (such as prices paid producers or received from retailers) is not entirely different from using a previous base price quotation as a point of departure. However, accumulated prices on actual transactions would include a much greater volume than base quotations reflecting mainly exchange trading.

Since more individuals are active in the futures market than in the spot call, it has been suggested that a futures market might be used as a basis for

establishing case egg prices. However, the level of egg futures prices during the delivery month is difficult to explain in terms of conditions existing in the egg industry. Moreover, if futures prices were to be used to discount out cash prices, an active futures market would be required for each month of the year. There are, moreover, some dangers in letting futures positions completely dominate the case market.

If the current growth of integration and coordination were to continue, and be extended to highly-differentiated brands or products, administered prices might become more feasible. Here, large private complexes could announce or negotiate prices to major buyers and could pay producers by formula or contract provisions. The two sets of prices would not necessarily need to follow each other closely all the time. This possibility appears remote at present.

If the marketing order (or supply management) approach were to become operative in the egg industry, price targets could be set which would minimize erratic price fluctuations. Such a system could generate much new information for decisionmaking. However, immediate prospects for such a system are not high.

Based on inventories of egg and poultry market news reports from Federal, State and private sources, the committee pricing experiment, and other evidence, it is apparent that substantial changes are needed in the scope and timing of market information. Just as the pricing mechanism itself has not changed rapidly enough to match continuing changes in the structure of the egg industry, so too, has a market information gap developed. Publicly-sponsored market news programs thus are not fully meeting industry needs. Certain kinds of information, mainly relating to volume movement, need to be made available much sooner than at present, if they are to be useable in short-run pricing decisions. Some price series are obsolete and need to be dropped. Some new price series and many more current indicators of supply and demand conditions are urgently needed. Private firms and associations have been intensifying the development of their own sources of information, but if the degree of perfect knowledge is to be generally increased, substantial improvements must also be made in publicly-sponsored programs. Only modest progress has been made to date in developing new information series and updating current series.

Comparison of Retail Food Prices in High-and Low-Income Areas

The equity of pricing and the quality of foods provided by chainstores in low-income areas has been a matter of controversy for some time. Findings of a special study in 6 cities show no identifiable pattern of differences in prices paid for a shopping list of 17 items or in quality of selected meat items between sample stores of the same chain operating in high-and low-income areas. Differences found in price and quality were largely random. Price variation among sample stores within high-or low-income areas was generally greater than that between high-and low-income areas for a single chain.

Consumer Knowledge and Use of Grades

A national survey of 3,014 households was conducted to evaluate consumer knowledge and use of Government grades for food products.

Consumers showed little knowledge about U.S. Government grades for food products. A grade awareness score was developed to examine the extent of knowledge about Government grades. Possible scores ranged from zero for those with no knowledge to eight (14 for beef steak) for those with complete knowledge. Varying with the commodity, 64 to 88 percent of the scores were zero.

A further indication of the general unawareness of grades is provided by the fact that a majority of consumers believed that all food is Federally graded and Grade A is best. Among purchasers of beef steak, 81 percent reported buying graded offerings, 25 percent correctly named a grade and 19 percent reported purchasing Grade A beef steak. For bacon 57 percent reported buying graded offerings and 13 percent reported Grade A as the Government grade purchased.

Despite the low level of knowledge exhibited by most of the sample, consumers who know of and use Government grades find them a valuable aid in purchasing food items. Varying among commodities, between 60 and 81 percent of the respondents who were knowledgeable about Government grades found them "very helpful."

Impact of Synthetics and Agricultural Substitutes

An examination was made of the probable impact of synthetics and agricultural substitutes on resource use and the agricultural marketing system.

Market losses due to synthetics and substitutes in 1967 and 1970 applying 1957-59 average market relationships were projected. Relative to 1957-59 selected examples of the projected impact of synthetics and substitutes on resource use are: based on a 500 pound yield per acre for cotton, the market loss equals production of cotton on 2.5 million acres in 1967 and 4.1 million acres in 1970; at an average yield of 4 pounds of clean wool per head, wool market losses equal product from about 80 and 119 million head of sheep respectively in 1967 and 1970; the 1967 and 1970 market losses for cane and beet sugar is projected at 0.37 and 0.57 million tons respectively; the paint market is declining rapidly in its use of fats and oils and losses for these ingredients are projected at 248 million pounds in 1967 and 351 million pounds in 1970.

The dairy industry is feeling the impact of agricultural substitutes over and beyond that of margarine. For example, filled milk sales for December 1967 was 6.8 million pounds and by May 1968 the sales had increased to 11.7 million pounds or a 72 percent increase in six months. Should this trend continue, the impact of this product on the consumption of fluid milk and cream could be substantial.

The marketing system for foods has not been basically altered as a result of the inroads made by synthetics and agricultural substitutes. For the most part, firms involved in distributing a given line of foods such as dairy products have merely added the synthetic item as an additional product offering. The adaptation of the additional products' line has been incorporated without substantial alterations in the firms' distribution pattern or outlets; a case in point is the addition and distribution of margarine, orange drink, whipped topping, etc., through established channels. Based on past experience, it might be expected that most additional synthetic food items will be made a part of the product lines offered consumers without substantial modification of the system.

A likely future change in market structure as an outgrowth of synthetics will be a decline in agricultural firms processing single commodities from specialized supply sources. These firms will shift to multiproduct lines and their raw material sources will include synthetic materials. Therefore, dependence on the agricultural sector will decline.

Promotion of Agricultural Products

A model of the hog-pork economy was developed to provide a basis for promotion decisions, establish a framework for evaluating promotion impacts, and to more clearly delineate basic economic relationships. The model consists of behavioral equations describing the monthly supply of hogs and cattle for slaughter, and pork for consumption; the retail demand for pork, beef and broilers; and the farm-to-retail margins for pork and beef. The supply responses for hogs, cattle, and pork are expressed as functions of both current prices and expected prices. Indications are that hogs, cattle, and pork are held off the market for later sale in the face of increasing expected prices. The farm-to-retail marketing margin for pork was found to be a function of the volume of hogs slaughtered, the farm price of hogs, a meat packer wage index, and time. The farm-to-retail margin for beef is related most strongly to cattle volumes and cattle prices. The results show demand for pork, beef, and broilers are all substantially related at the retail level. Consumer disposable income is also an important positive influence. Demand for pork and broilers fluctuate substantially and systematically from month to month, but demand for beef is stable throughout the year.

Since the coefficients derived from this research can be utilized to estimate supplies and prices of hogs and pork; the model can be utilized in planning promotional activities as well as evaluating sales effectiveness of the promotion. That is, promotional activities can be timed to alleviate the buildup of excessive supplies and aid in stabilizing prices. In addition, the model can be utilized to estimate expected price levels and movement, in the absence of promotion, during periods of promotional activities to serve as a basis for evaluating the effectiveness and returns to promotional expenditures.

Cotton Warehousing Costs

A study of the estimated cost of storing and handling cotton at public storage facilities in 1968-69 was completed. Estimated total cost for storage averaged 58 cents per month per bale. Utilizing the results of this research, ASCS announced on May 22, 1968 that rates paid for storage of CCC-owned cotton would be increased from 41 cents per bale to 50 cents per bale for compressed cottons. Noncompressed cottons will be 5 cents per bale higher. Loading out charges were also increased from $1.00 per bale to $1.25 per bale.

Additional analyses are being made to determine the effects of declining volumes, size of plant, and location on costs.

Fractionated Alfalfa Meal

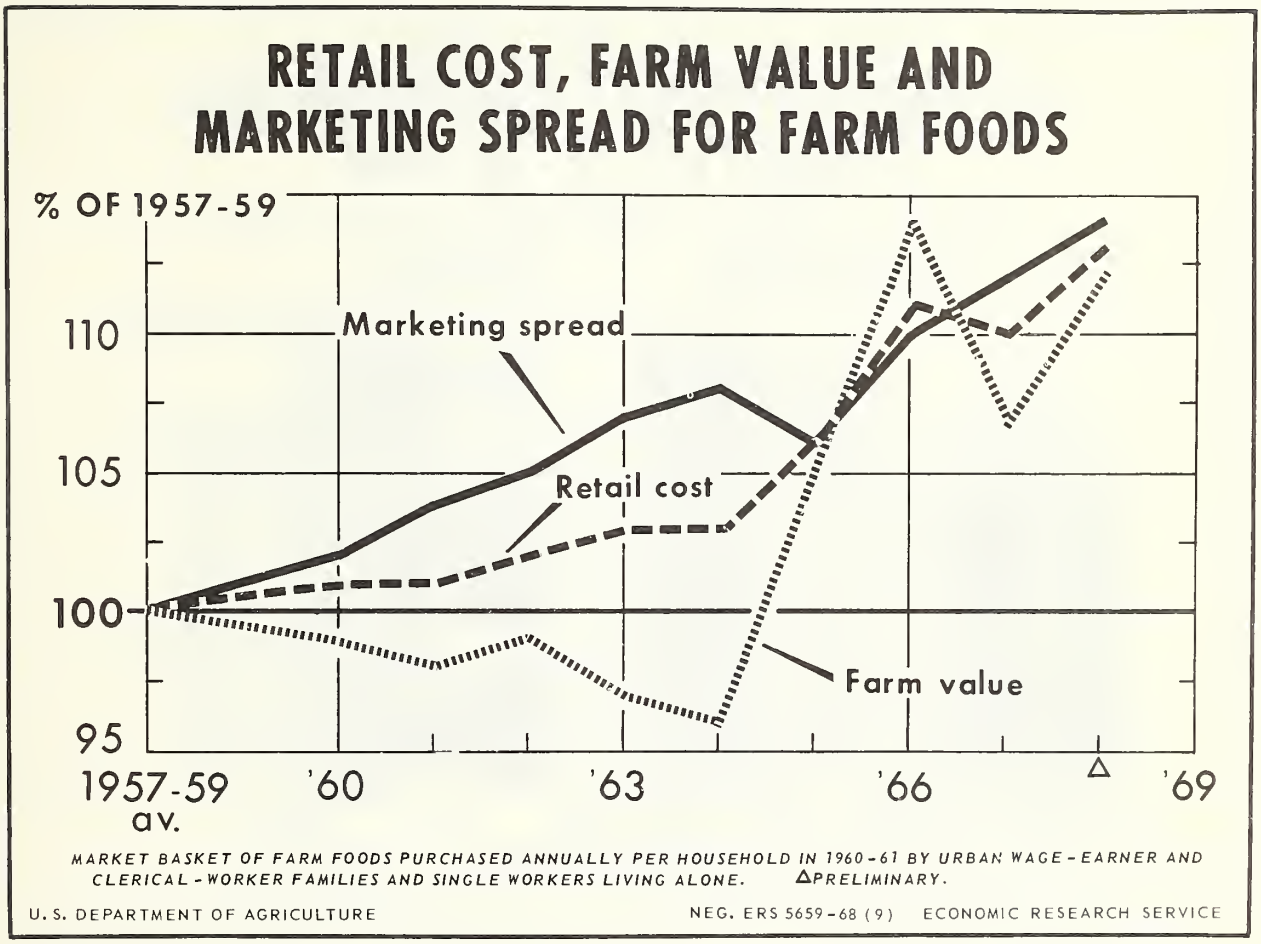
The Western Utilization Division of ARS has developed a process for fractionating alfalfa meal into low-protein and high-protein fractions. Information was needed on the economic value of the high-protein fraction in various kinds of rations for poultry to provide guidance to the physical research program. Through the use of parametric linear programming, a precise determination of the value of a specific feed ingredient in a ration can be determined. The use of this procedure and subsequent analysis confirmed that xanthophyll, a pigmenting agent, was the most important economic factor in the high-protein alfalfa fraction for poultry feeding. The findings indicate that under given conditions of price and ration type, a dehydrated alfalfa meal with a high-protein content would be able to compete successfully with competing feed ingredients in a mixed feed ration for poultry.

Economies of Scale in Feed Manufacturing

Model feed manufacturing specifications and costs were developed for six sizes of mills ranging in capacity from 80-ton to 300-tons of finished feed per day. These models are based on a series of previous studies of the various cost centers in feed manufacturing. Total operating cost per ton of output ranged from $7.13 to $3.04. An 80-ton operation, pelleting and packaging its entire output, had the highest cost. The lowest cost was for the 300-ton operation with no pelleted feeds and with the total output handled in bulk. Total operating costs declined about 40 percent between similar operations of the smallest and largest volume groups. Greatest reductions in total operating costs occurred as volume increased from 80-to-200 tons per 8-hour day. When plant costs were estimated for a 16-hour day, costs per ton of finished feed were reduced an average of 20 percent.

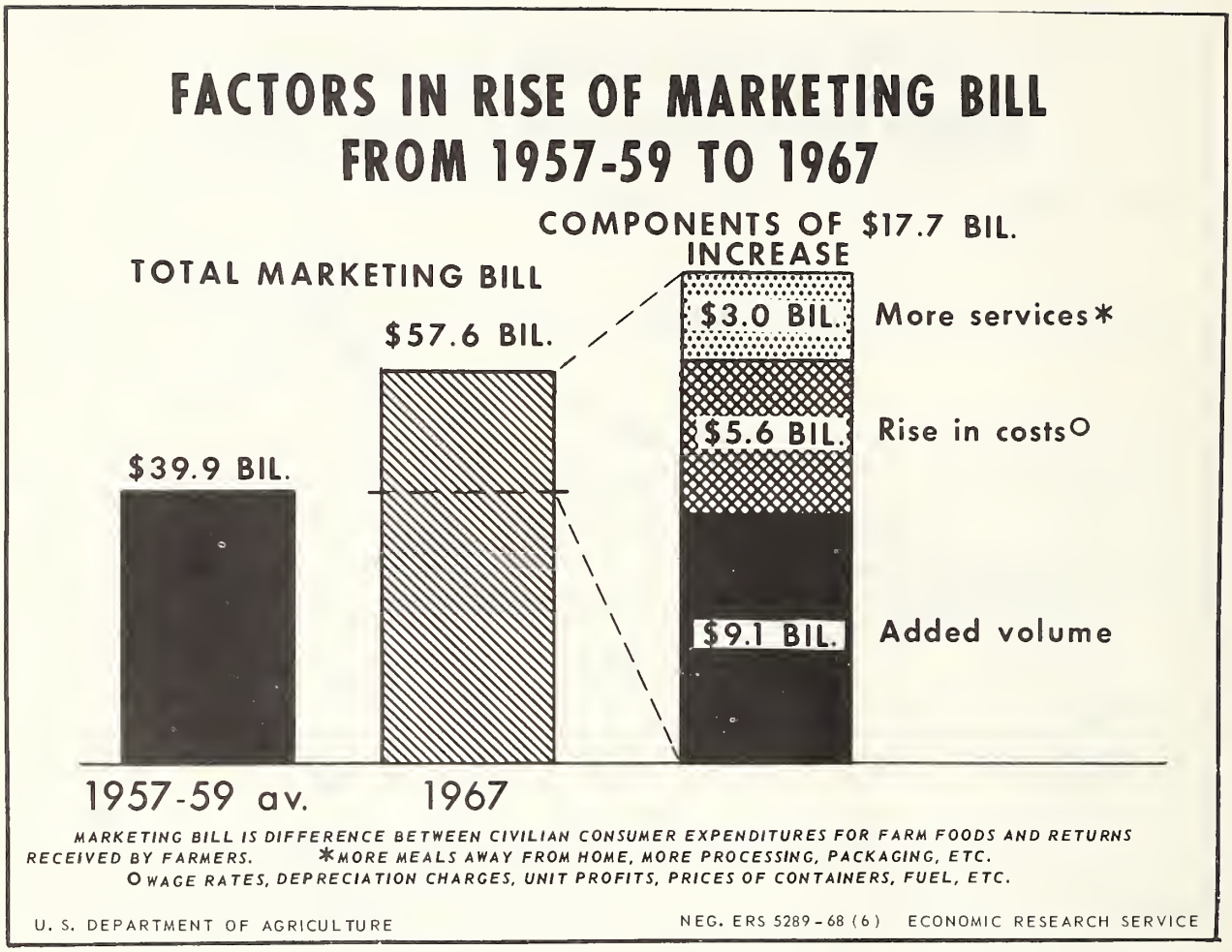
Graphic illustrations of work carried out in the Division include:

Figure 1



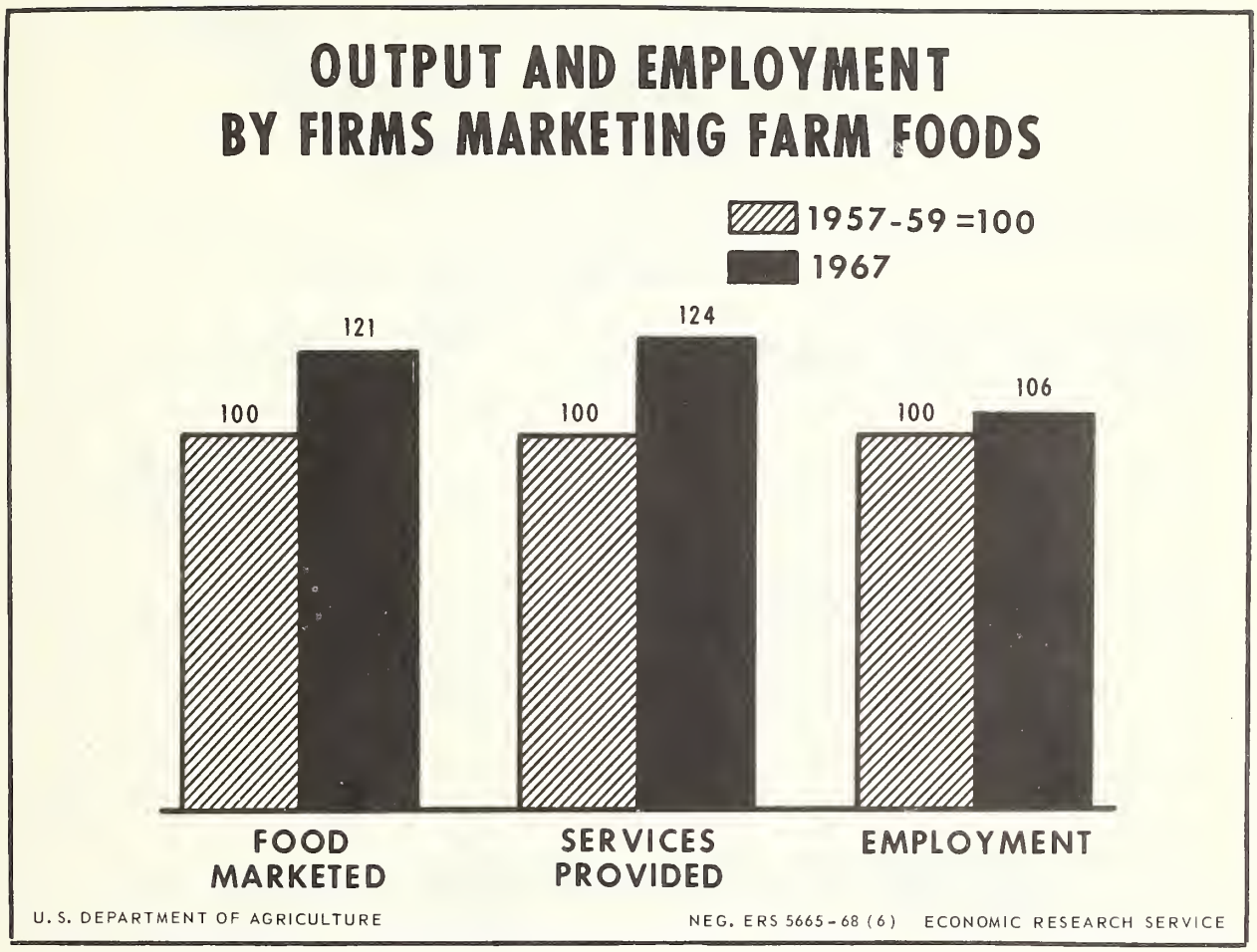
After declining slightly from 1966 to 1967, the retail cost of the market basket of farm foods advanced about 3 percent from January to August 1968. Most of this rise was the result of higher farm prices for livestock products and fresh fruits and vegetables. The overall farm value of foods in the market basket went up 5 percent in the first 8 months of 1968. Marketing spreads widened by about 2 percent. The farmer's share of the consumer's dollar is expected to average 39 cents for 1968, 1 cent more than in 1967.

Figure 2



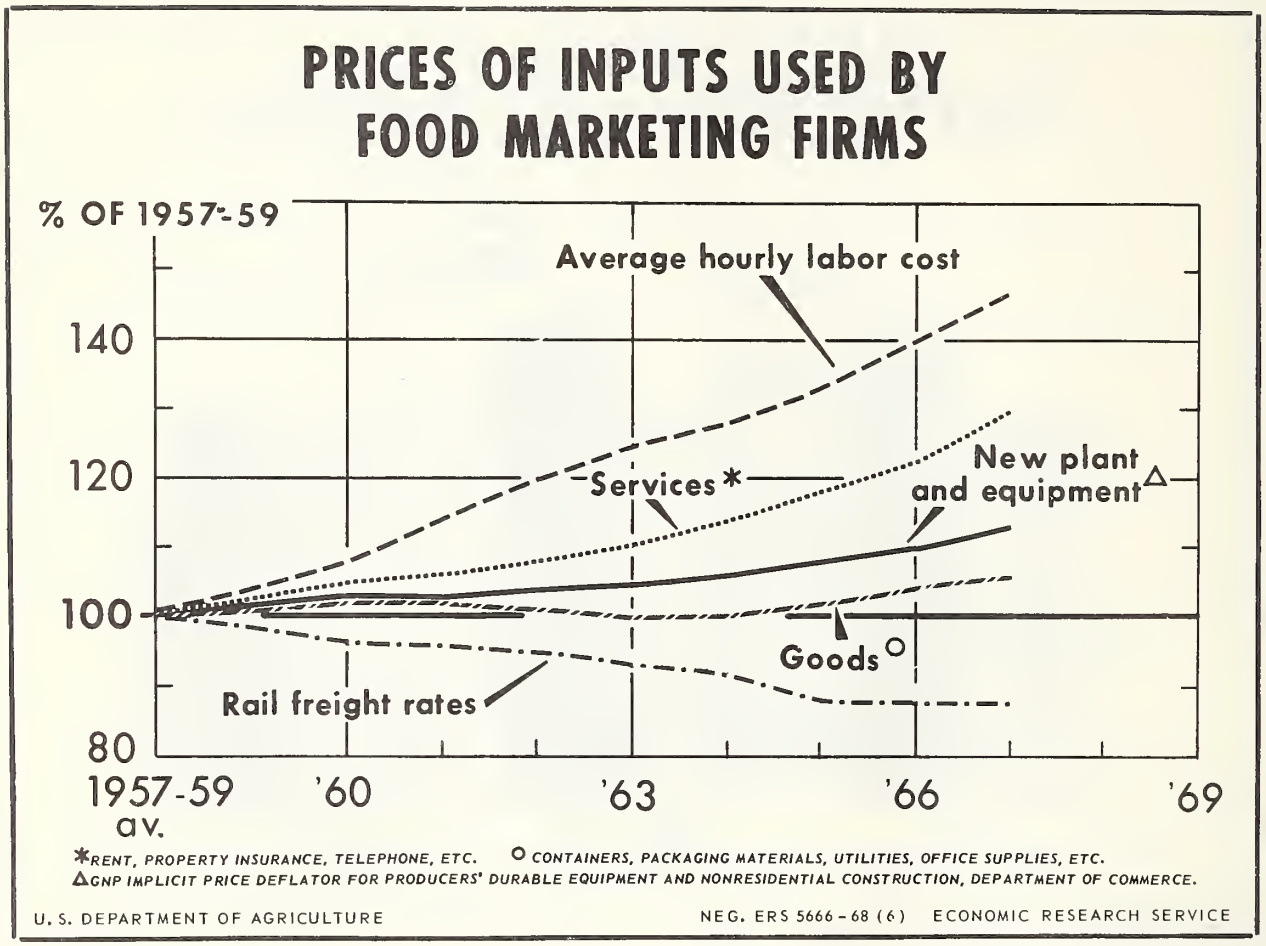
The marketing bill increased $17.7 billion from 1957-59 to 1967. An increase of 21 percent in the quantity of food moving through the marketing system caused 51 percent of this increase. Of most concern is that part of the increase in the bill resulting from rising costs and profits and added services per unit of product. These factors are significant because they have been the main forces affecting marketing spreads and retail food prices. Rising costs--labor, transportation, materials, etc., have caused 32 percent of the increase in the marketing bill since 1957-59. Added marketing services such as more processing and those provided with more food eaten away from home accounted for the remaining increase in the bill, or 17 percent.

Figure 3



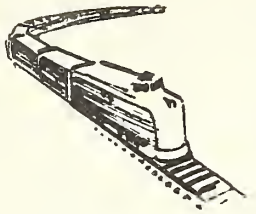
The marketing system is providing more services with food, adding to marketing costs and retail food prices. The volume of services provided by the marketing system increased by a larger percentage since 1957-59 than the volume of food marketed. As a result, the amount of services per unit of food marketed increased between 2 and 3 percent. Much of the increase came via food consumed away from home, and by more packaging and processing. Despite the swelling volume of food and services moving through the marketing system, there has been only a moderate increase in the number of persons employed in the industry. Employment (on a full-time equivalent basis) by marketing firms was 6 percent higher in 1967 than in 1957-59, with most of the increase occurring in away-from-home eating establishments.

Figure 4

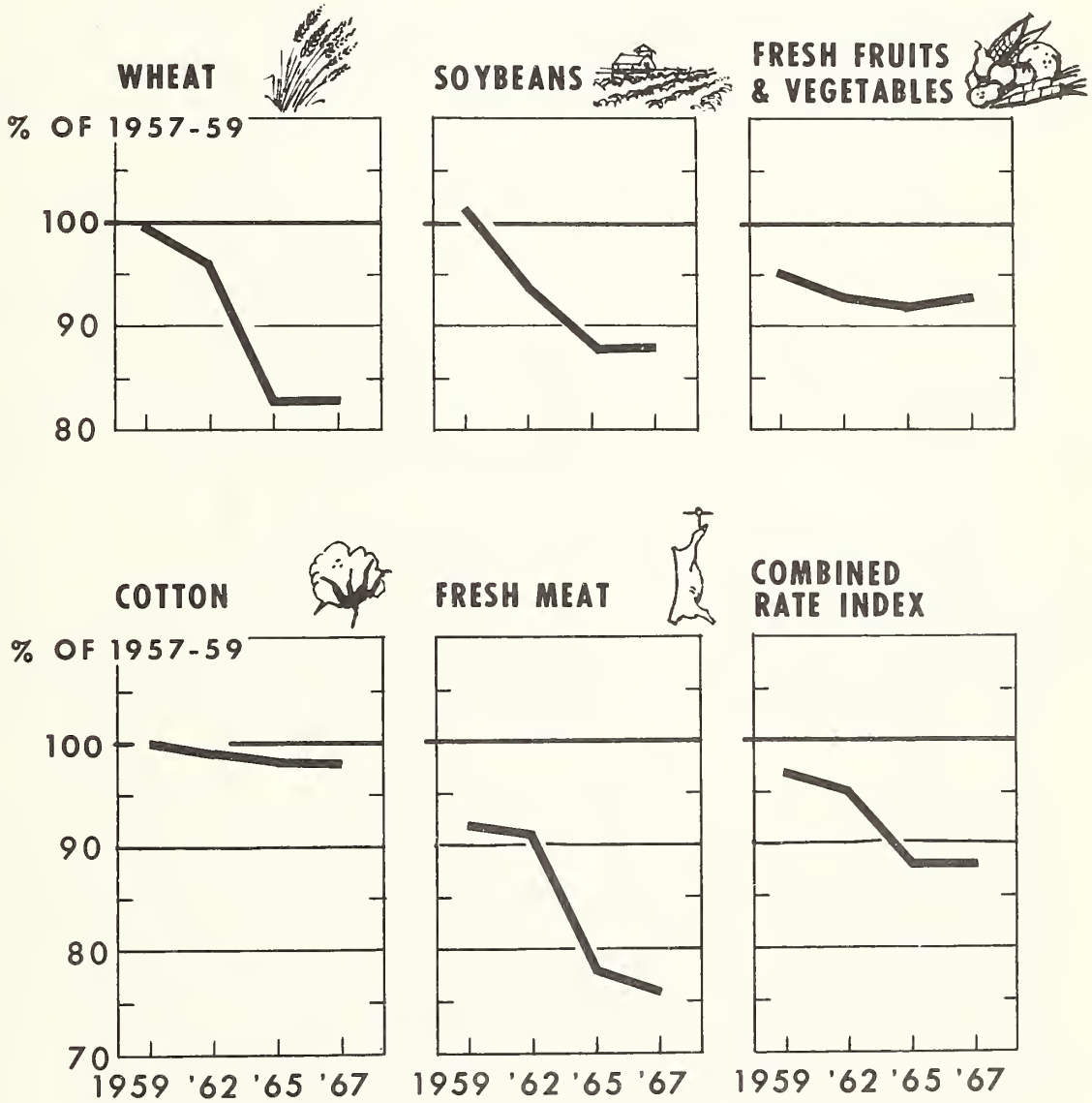


Prices of inputs purchased by marketing firms continue to rise, maintaining an upward pressure on unit marketing costs. Since 1957-59 the hourly cost of labor (payrolls plus fringe benefits) has increased 47 percent or around 4.4 percent per year. The rate of increase in recent years has been slightly more than average. Prices of services purchased by marketing firms also are much higher now than in 1957-59. Prices of goods, such as containers and packaging materials, were relatively stable during the early 1960's but have gone up 6 percent since 1964. The rise in prices of inputs has been partially offset by increased efficiency. Output per man-hour in food marketing increased at an average rate of 2.4 percent from 1957-59 to 1967.

Figure 5



TRENDS IN RAILROAD FREIGHT RATES: Freight rates have leveled off since 1965 after a sharp decline -- especially in wheat, soybeans and fresh meat -- in the early 1960's. This leveling off reflects two somewhat offsetting forces. There continued to be in 1966 and 1967 many specific proposals to reduce rates for meeting competition, but increased costs by 1967 led to a general rate increase proposal by the railroads. This increase of about 3 percent was granted, effective in mid-August 1967. However, the increases were not applied uniformly over all regions and for all commodities. Another rate increase was proposed in 1968, but hearings on this proposal have not been completed as yet. An interim increase of about 2½ percent has been granted.



MARKETING ECONOMICS DIVISION

USDA and Cooperative Program

Location	Scientist Man-Years F.Y. 69 Research Problem Area										
	501	503	504	505	506	507	508	509	510	808	Total
Washington, D.C.	1.4	1.6	6.1	7.9	1.4	4.2	12.1	20.7	1.0	3.7	60.1
Arizona			1.3								1.3
California			0.6	1.0		0.1	1.0				2.7
Colorado						1.0					1.0
Florida		1.0									1.0
Georgia				2.0							2.0
Idaho						1.0					1.0
Illinois				0.8			1.0				1.8
Indiana			1.0	1.0			0.4	1.0			3.4
Iowa			1.0								1.0
Kansas	1.0										1.0
Louisiana							1.0				1.0
Michigan				1.0	0.6						1.6
Minnesota				1.7					0.7		2.4
Mississippi			2.0								2.0
Missouri				0.2							0.2
Nebraska								0.8			0.8
New Hampshire				1.0							1.0
North Carolina						0.8					0.8
Oklahoma			1.0	0.3							1.3
Pennsylvania				1.0			1.0				2.0
South Carolina	2.8		1.2								4.0
Tennessee	1.0										1.0
Wisconsin						1.1					1.1
Total	6.2	2.6	14.2	17.9	2.0	8.2	16.5	22.5	1.7	3.7	95.5

Intramural program is supplemented by extramural support representing 7.0 SMY's at State Agricultural Experiment Stations. 1/

1/ RPA 503, 1.0; RPA 504, 1.0; RPA 507, 1.0; RPA 508, 1.0; RPA 510, 3.0.

RPA 501 - IMPROVEMENT OF GRADES AND STANDARDS

A. Problems and Objectives

Market prices for many agricultural products do not adequately reflect differences in their use values. This creates a major problem in pricing efficiency. Under these conditions market prices cannot provide effective guides for production or marketing decisions. The identification and evaluation of individual factors affecting use value is critical to developing adequately descriptive grades and standards which in turn provide the means of effective communication and pricing efficiency in the system.

Major objectives of this research are to:

1. Determine the significant factors affecting the use value of selected raw agricultural commodities and evaluate their relationship to processing performance and price.
2. Develop more accurate quantitative measures of these factors.
3. Develop a more effective pricing system for agricultural commodities on the basis of measurable and pertinent quality factors.

B. Progress - USDA and Cooperative Programs

Cotton

A mill survey of raw cotton requirements was completed and preliminary results indicate a substantial shift away from all-cotton products and in the qualities of cotton being used in selected end products. The data on the quality and prices of cotton used and competing fibers blended with cotton provides measures of pertinent quality requirements in mixes used for various yarn sizes in specific end-use products.

Results of a linear programming model, developed to optimize cotton blending and yarn processing, show opportunities for significant cost reductions in manufacturing. This model takes account of the fact that situations occur where the least-cost blend may be relatively expensive to process. Three of the more important processing variables considered are roving size, amount of twist in yarn, and spindle speed. Further refinement of the technological and cost coefficients is continuing. It is planned to expand this decision model from a firm to an industry system, thus providing a valuable policy evaluation tool and an improved basis for refining cotton grades and standards and price quotations.

Tests to evaluate newer varieties of Southeastern cotton indicate a trade-off or substitutability of longer length and finer fibers for the high strength of Western cottons which had commanded significant premiums in the market.

The effects of gin cleaning on Pima cotton showed that the lower grades were discounted too much in the pricing of the cottons. The producer benefitted from additional gin cleaning with resulting higher grades. However, the use-value of the cottons to the mills favors the ginning treatment with little or no cleaning.

Swine

Extensive field data collected in 1967-68, compared with data from 1960-61, showed a marked improvement in hog quality. Hogs grading U.S. No. 1 increased during the 7 years from only one-third to 49 percent of the hogs slaughtered under Federal inspection. Percentages graded No. 2 in 1960-61 and 1967-68 were similar (38 and 36 percent). Hogs grading U.S. No. 3 dropped to 12 percent from the 25 percent level in 1960-61. The remainder, less than 3 percent in both studies, graded medium and cull. Carcass grade standards used for the studies in both periods were the same; however, beginning April 1, 1968, the Department revised the official standards.

Tobacco

A model of tobacco processing was developed under contract with the Research Triangle Institute which identifies the various stages and processes involved, and outlines the flow of tobacco through the system. The model contains a considerable amount of basic engineering information pertinent to tobacco processing. However, a considerable amount of work will be required from ERS personnel to put this model into a form useful for economic analysis. The sample design and sampling technique developed by Research Triangle Institute to collect grade data for relating Federal and commercial grades will require further refinement.

RPA's 503, 504, 505 - PHYSICAL AND ECONOMIC EFFICIENCY IN MARKETING
(503, FRUITS AND VEGETABLES; 504, FIELD CROPS; 505, LIVESTOCK)

A. Problems and Objectives

Constant changes in new technology and innovations are occurring in the physical processes of marketing agricultural commodities. These changes lead to reduced marketing costs with subsequent impacts on incomes to farmers, the competitive position of input and output marketing firms, and prices to consumers. The role of economic research is to provide more precise measures of these impacts and to analyze their effects on the performance of the marketing system.

Major objectives of this research are to:

1. Measure farm-to-retail price spreads and their components.
2. Determine alternative methods that result in increased efficiency.
3. Analyze the optimum size, number, type, and location of marketing facilities.
4. Develop market system specifications required to provide efficient services at minimum cost.

B. Progress - USDA and Cooperative Programs (503, Fruits and Vegetables)

Marketing Margins

Price collections were continued on 31 fresh fruit and vegetable items, 19 canned fruits and vegetables, 12 frozen items and 1 dried commodity. Price spreads were calculated from the basic price data. These data show for example that in 1967 the total U.S. apple crop was only slightly smaller than in 1966. However, the 1967 Washington Red Delicious Apple Crop was about one-fifth smaller than the 1966 crop. The average retail price per pound for Washington Red Delicious Apples in Chicago and New York City was 27.3 cents for the 1967-68 marketing season; 1.8 cents per pound more than in 1966-67. The retail value of a 42 pound carton of apples averaged $11.00 in 1967-68 as compared to $10.25 the previous season. The amount received by the grower-packer increased from $4.46 a carton in 1966-67 to $5.71 in 1967-68. The grower-packer returns in 1967-68 represented 52 percent of the retail price. The retail margin increased from $3.69 a carton to $4.23, while the transportation-auction margin dropped from $2.05 to $1.06.

The 1967 sweet potato crop was about equal to the small 1966 crop. However, prices in the 1967-68 marketing season were somewhat higher than in 1966-67. The average retail price per pound for sweet potatoes in New York and Chicago increased from 16.2 cents in 1966-67 to 18.4 cents in 1967-68. The average retail value of a 47-pound crate of sweet potatoes in these cities was $7.79 in 1967-68. This was 95 cents higher than in the preceding season. The returns

to the grower-packer were $4.29 in 1967-68, an increase of 26 cents. The remainder of the increase went for a larger retail margin.

Fruit and Vegetable Processing

Vegetable canning and freezing plants in the Southern States were surveyed to determine vegetable processing capacity and utilization. Plant data were classified by geographic area, sizes, and types. The processing plants included 134 canning plants; 18 freezing plants and 2 canner-freezer combination plants. Texas had the largest number of plants, 29; Tennessee had almost 40 percent of the freezing plants. The analysis of plant capacity under usual conditions established the capacity of vegetable canning at 58 million cases. Freezing capacity was approximately 256 million pounds of vegetables. Canning plants utilized only 57 percent of their vegetable processing capacity; freezers used 74 percent of their capacity. About 390,000 tons of vegetable raw products could have been processed by using surplus capacity; 38 percent of this tonnage was in Louisiana and Texas.

C. Progress - USDA and Cooperative Programs (504, Field Crops)

Marketing Margins

Bread prices have continued their upward trend almost uninterrupted since 1947-49. The U.S. average price in 1967 was 22.2 cents per pound loaf sold in food stores. But the rate of increase per year has slowed down to 1.8 percent during the 1960's from 3.2 percent during the 1950's. Most of the increase has occurred in the baking segment, followed by retailing. The farm value of ingredients used in a pound of bread was 3.4 cents in 1967, only 0.1 cent above the 1947-49 average, while the retail price of bread increased 8.7 cents during the same period. The retail price of bread in the first two quarters of 1968 has averaged just slightly below the 1967 average.

Soybean oil now accounts for about 80 percent of the total oil utilized in salad dressings and is the market for about 12 percent of domestic soybean oil production. Research shows that nearly 3,800 brands of salad dressing are marketed and that brands are an essential part of product differentiation and sales promotion efforts. During 1966, prices at chain retail stores were as much as 7.5 cents lower than in small retail stores for major brands, and as much as 4.8 cents lower for minor brands. During the past 10 years, both the value received by farmers for crude oil used in salad dressings and the manufacturers selling price of salad dressings have decreased. However, the manufacturer-retail spread has increased nearly 50 percent during this period and now accounts for about 60 percent of the retail selling price.

Few all-cotton items of any significance remain as a basis for continuing the computation of a cotton farm-to-retail spread. Consequently, efforts are to develop a margin for all textiles which will be related to an input-output analysis of the textile industry.

Cotton Ginning Capacity

In the High Plains of West Texas, estimated ginning capacity exceeded actual production by 44 percent during the 1965-66 season and by 66 percent the following year. Competition among gins for the dwindling production of seed cotton is being met in the form of price concessions and extra services while operating costs continue to set new record highs. Based on an analysis incorporating standardized depreciation and return on investment, average ginning volumes in the area presently are insufficient to break even.

Cotton Ginning Costs

The average charge for saw ginning and wrapping a 500-pound bale of upland cotton was $18.60 during the 1967-68 season, an increase of 35 cents over the 1966-67 average. The average charge, by States, varied from $21.36 per bale in California to $13.36 in Alabama. The 1967-68 average charge for roller ginning and wrapping a 500-pound bale of American-Egyptian cotton was $28.13--up from $27.09 in 1966-67. The number of active gins has declined from 4,870 in 1965 to 4,608 in 1966 and to 4,202 in 1967. In 1967-68, 94 percent of the upland cotton was machine harvested compared with 89 percent a year earlier.

Textile Manufacturing Costs

Textile manufacturing costs are being estimated from information available from the research of the ARS Pilot Spinning Laboratory located at Clemson and supplemented by other information from commercial operations. Particular emphasis in these analyses is focused on determining the relationship of fiber properties to spinning performance, yarn quality and costs of manufacturing.

This is a phase of a broad program of research directed toward evaluating the end-use value of cotton. Findings indicate that these analyses will be extremely useful to cotton growers, buyers, and manufacturers. Also, these findings are helping to bring about a better understanding of some of the factors affecting the use and value of cotton.

This research points up the need for more accurate measurements of these quality relationships under controlled or experimental conditions and in commercial mill operations.

Grain Storage and Handling Cost

Research relating to the cost of storing and handling of grains in public storage facilities will be continued and updated. A survey of 105 of the participants included in the 1965 original survey will be conducted to determine the nature and extent of changes that may have occurred since the base period. This research provides a basis for many public policy decisions on grain storage and is a vital input for our analyses of the grain marketing system.

Rice Storage and Handling Cost

A study of the cost of drying, storing and handling, and milling rice was initiated. Detailed cost estimates have been obtained from a sample of 32 firms from three major producing areas (Arkansas-Mississippi, Louisiana-Texas, and California). This detailed information will enable costs to be developed for each major function of these operations. These functional cost data and analyses will enable management to appraise the efficiency of their operations and to see the effect of such factors as size, volume handled, and location on costs. These data also will provide information needed in the development of an overall system analysis of the rice industry.

Supply and Spinning Performance of Cotton Gin Motes

About 38 percent of U.S. gins collected motes--any gin waste usable for its fiber content--in 1966-67. The proportion of gins that reclaimed motes varied from 27 percent in the South Central region to a high of 75 percent in the West. Approximately 82 million pounds were reclaimed and ginners received an average of 3.25 cents per pound for baled motes and 0.86 cent for loose motes. Though test results indicate few adverse effects on lint quality and spinning performance as a result of blending up to 11 pounds of reclaimed fiber into a bale, we do not suggest it become a commercial practice until more information is available on the influence of motes on other manufacturing processes and mill procurement arrangements.

Transportation and Location Economics

A spatial equilibrium model of the domestic grain industry has been developed. Preliminary results indicate a considerable suboptimization of the storage-processing-distribution system. The influence of alternative storage programs on the transportation system and the effect of alternative transportation rates on the grain marketing system are being studied using this model. The model is being updated and refined.

Incorporating previously developed estimates of costs for handling and storage and for transportation, the feasibility of extending the 9-foot Missouri River barge channel from Sioux City, Iowa to Yankton, South Dakota was studied at the request of the Army Corps of Engineers. A minimum cost flow analysis indicated that such an extension of the channel is feasible and would increase the flow of grains and oilseeds down the Missouri from the study area by some 760 thousand tons.

The effect of changes in transportation rates on the location of the flour milling industry is receiving special attention and a report will be completed this year identifying the location of excess milling capacity and the economic costs of alleviating it via use of alternative transportation rate structures. This work is being conducted in cooperation with Iowa State University and is a vital part of the refinement of analyses of the grain marketing system. It also relates directly to the objectives of the Mid-America Governors' Transportation Committee.

The archaic distribution system and redundant services performed by wholesale bakeries account for a large proportion of the cost of bread. A model regional organization and distribution system for the wholesale bakery industry is being developed in cooperation with the University of California and the local industry. Preliminary results confirm substantial inefficiencies in distribution methods and practices. Results from studies such as this, when combined with those of other sectors of the industry, provide the refinements necessary for evaluating the entire grain and grain products marketing system and developing suggestions for improvement.

A study is nearing completion on the influence of changes in transportation rates and transit privileges on the soybean processing industry. Specific attention is given to the effects of changes in transportation costs on the geographical flows of soybeans, soybean oil, and soybean meal and adjustments in processing facilities. This research is being conducted in cooperation with Purdue University.

D. Progress - USDA and Cooperative Programs (505, Livestock)

Marketing Margins

Collection has continued of prices on a monthly basis for frying chickens, three sizes of Grade A eggs, and for three market classes of turkeys. Price spreads are calculated for four trading levels as well as the farmer's share of the consumer's dollar. Cities included are Boston, New York, Baltimore, Washington, Atlanta, Chicago, Cleveland, St. Louis, Denver, Los Angeles, San Francisco, and Seattle. Data collection has begun to permit the addition of two more cities in FY 1969, probably Minneapolis-St. Paul and Houston. This will round out the geographical coverage of the regular margins series. Experimental calculations are also being made for possible later addition of series on egg products and fowl. BLS revisions of benchmark data for July 1967 necessitated revisions of regular margins data back to January 1963.

In 1967, the average retail price of Grade A large eggs in 12 cities was 49.9 cents per dozen; the farmer's share of the consumer price, 55.5 percent. The 1967 average retail price of frying chickens was 39.0 cents per pound; the farmer's share, 46.7 percent. The October-December 1967 average retail price of 16-24 pound turkeys was 46.6 cents per pound; the farmer's share, 51.5 percent. During 1961-66, farmers received 58 percent of the retail price of Grade A large eggs; 50 percent of the retail price of frying chickens; and 57 percent of the retail price of turkeys. Based on analyses done under the egg pricing research program, margins taken by middlemen appear to widen when prices are high and are constant to narrower when prices are lower.

During 1967, 12-city farm-to-retail price spreads averaged 22.2 cents per dozen for Grade A large eggs, 20.8 cents per pound for Grade A frying chickens, and 22.6 cents per pound for Grade A medium turkeys.

A study in several major cities of the effects of retail meat specials on prices of beef and pork has been completed. Two effects on the composite

price for all cuts purchased by the consumer were identified--the price effect being the decrease due to the lower price of the cut when on special, while the volume effect results from the increased sales of the cut while on special. For beef, the volume effect was found to be .72 times as large as the price effect. The pork volume effect was .52 times as large as the price effect. These constants allow an estimate of the combined or total effect of specials, as the price effect is currently available from MED's retail meat survey.

Poultry and Eggs

Further processed poultry and egg products can provide a profitable opportunity for many firms, depending on their location, plant size, and type of product mix. The outlook for increased production of these products in the South is favorable. Small seasonal operations producing only whole eggs or eviscerated poultry will remain under heavy competitive pressure, and new products and processes may be of some help in improving profit margins and increasing net incomes of processors and producers. Further processed products may also offer some potential for expanding total per capita consumption of poultry and eggs.

Eggs delivered to breakers as a percentage of eggs received from farmers by commercial egg assemblers declined in the East and West North Central regions from 1963 to 1967. The South Atlantic and South Central regions showed increases. This parallels comparable shifts in total egg production in those same regions.

From 1962 to 1967 the number of plants slaughtering poultry under Federal inspection dropped from 532 to 455, while total volume rose from 8 billion to 11 billion pounds. Most of the plants were in the 10 to 30 million pound size group in both years, but all of the growth in number of plants was in the largest size group, while declines occurred in the small size groups. On the volume side, all of the growth was in the category of plants slaughtering 60 million pounds or more per year.

Although slaughter volume increased in all regions from 1962 to 1967, the largest increases were in the South Atlantic and South Central regions. The largest decline in plant numbers was among plants slaughtering young chickens; turkey slaughtering plants showed the second largest decline in numbers.

Federally-inspected plants in further processing increased from 444 in 1964 to 488 in 1967. The volume of poultry meat used increased during the same period from 632 to 961 million pounds. The largest increase in volume of poultry used was in the large size group--those plants using 5 million pounds or more per year. Smaller size groups all showed declines.

Low-dose ionizing irradiation offers promise for Salmonella control in the future. However, heat pasteurization of egg products and cooking and freezing of turkey rolls are likely to be cheaper methods. While irradiation can extend shelf-life considerably in comparison to ice-packed broilers,

other available techniques may be able to extend shelf-life sufficiently with possibly lower costs.

Cost projections on alternative cooling methods for turkeys prepared for Western Utilization Laboratory (ARS) indicate lengthening cooling time adds 0.1-0.5 cent per pound to costs, depending on plant size and market class. Hence, longer cooling time to increase tenderness would be desirable where the small added costs can be recovered through price premiums.

Substantial economies of scale exist in specialized mills for manufacturing feed for either egg production or turkey production. However, the feasibility of specialized mills depends on the volume and density of production and the availability of locally-produced feed ingredients. Reliance on the use of complete feeds for turkeys would justify the investment in and operation of specialized feed mills. However, the availability of large quantities of feed grains in the Midwest and a shift toward use of concentrates strongly indicates that the industry does not generate sufficient demand to justify a large number of dispersed specialized mixing facilities.

Between one-third and one-half of New England's egg requirements were handled by 105 egg marketing firms surveyed. More than half the firms had annual volumes between 5,000 and 50,000 cases. Firms in the producer group handled 28 percent of total volume; the packer group nearly 60 percent. About 60 percent of the eggs handled came from producers and another 27 percent from flocks owned by marketing firms. Chain stores took nearly 40 percent of the total volume, wholesalers, 28 percent; and independent stores, 12 percent. About 57 percent of the eggs sold were graded and cartoned and an additional 30 percent graded but uncartoned.

Livestock

Both livestock slaughter and meat processing are deconcentrating. Small and medium-sized firms are growing faster than large. Specialized firms are growing faster than others. In both slaughter and processing, rapid growth and high entry rates imply competitive structure. Divergence in structural trends of the two sectors of meatpacking imply a two-industry concept.

The beef marketing information system was evaluated using communication theory. Present descriptive terminology and grade standards show some inadequacies. There are many different channels and conditions of exchange which need further examination for adequate comparison. Due to these many and changing market channels, market news media must constantly reappraise and revise their work. Consumer preference feedback needs emphasis.

Unhairing hides at packinghouses can reduce marketing costs by $1.20 per hide. Due to capital investment in new equipment and plants, some European tanners are more efficient than U.S. tanners. Many European tanners desire to purchase s emiprocessed hides. Substitute leather products took 5 percent of the side upper leather market in 1967.

Dairy

Preliminary indications show wide variation in central milk buying and merchandising programs and the degree to which retail stores participate in these programs. The more formal and elaborate programs appear to be employed by the larger corporate chains.

Nationally the share of the four largest companies in the packaged fluid milk market increased from 17.7 percent in 1950 to 21.4 percent in 1954, then dropped off slightly in 1958 and 1963. Between 1948 and 1965 the number of fluid milk bottling plants operated by commercial processors in the United States declined 53 percent--from 8,484 to 3,981--while sales increased 63 percent. In this same period, 85 percent of the producer-dealers in the United States left the business. Many of these individual processors that have discontinued processing have become subdealers or distribution branches. Such outlets accounted for about one-third of all U.S. packaged milk sales in 1965. In January 1965, 1,315 distribution branches were operated by firms owning fluid milk plants and more than 7,700 independent subdealers were in business.

In the smallest sizes of Federal order markets, pool plants accounted for less than 80 percent of the sales within the marketing area, with most of the remainder from plants regulated under other Federal orders. In the two largest size groups over 95 percent of the sales were made by pool plants. Producer-dealers were of minor significance in all size markets, in no case accounting for 1.6 percent of sales.

There has been a differential supply response by supply areas when those areas are considered as small units (county) rather than as larger areas such as states or regions. In the Northeast, milk production has tended to become more concentrated within milk production centers. Generally those milk production areas where dairy has not been a major enterprise have declined as a source of milk--either absolutely or, at least, relatively. So, too, have those areas near metropolitan centers where cows have lost ground to people. The production pattern changes have had marked influence on procurement activities by the various milk processors and manufacturing operations. The changes in production area, in connection with simultaneous changes in procurement policies and surplus handling, have placed tremendous pressure upon the smaller manufacturing operations, especially their procurement efforts.

RPA 506 - SUPPLY, DEMAND, AND PRICE ANALYSIS

A. Problems and Objectives

As a greater share of our agricultural production goes into processing, the gap between what the farmer receives and what the consumer pays widens. In view of this, the need for improved forecasts of supply, demand, and prices of farm products are essential to more efficient and orderly marketing. Individual producers, processing and marketing firms, Government policymakers, all require objective information on future supply, demand and price conditions to make sound decisions. This type of information is of special importance to small firms, farmers, and consumers who do not have the resources for analyzing the many interrelated factors that must be considered in forecasting supply, demand, and price.

Major objectives of the research are to:

1. Measure the effects of changes in supply of individual commodities upon farm prices, marketing spreads, and consumer prices.
2. Evaluate the effect of substitute materials on demand for farm products.
3. Develop a market system approach for a better understanding of the interrelationships and ramifications resulting from shifts in supply, demand, and price.

B. Progress - USDA and Cooperative Programs

Price Variations for Hogs

Prices in terminal and interior hog markets tend to move quite closely together from day to day. Opening times of the terminal markets, schedules, filing times of market reports, and correlation coefficients suggest that price information flows from east-to-west during the day and west-to-east with a day lag involved. Important explanatory variables for supply are lagged live hog price and dummy variables. Important explanatory demand variables are lagged wholesale price, quantity of live hogs marketed in recent periods and day of the week. A 1.0 percent increase in quantity resulted in only about a .05 percent decrease in price the same day. The change in quantity affects the price of hogs for the next 2 days, but to a lesser extent each succeeding day. In determining the farmer's supply response, price lagged one day was important, but prices lagged for 2 or 3 days were not. A 1 percent increase in price resulted in an 8-to-10 percent increase in supply the next day.

RPA 507 - COMPETITIVE INTERRELATIONSHIPS IN AGRICULTURE

A. Problems and Objectives

Competitive relationships in agriculture change constantly with the development of new technology, shifts in costs and consumer tastes, and organizational changes in the production, marketing, and farm supply sectors. Information on the nature, extent, and ramifications of these changes provide a firmer basis for public policy and private investment decisions.

Major objectives of the research are to:

1. Determine and analyze major factors affecting locational advantages of industries engaged in the marketing, processing, and distribution of agricultural products.
2. Estimate equilibrium conditions with respect to market structure, plant and industry location, product flows and prices, cost efficiencies, and resource allocation.
3. Measure the impact that changes in major locational factors and Government programs have on regional competition and resource allocation.

B. Progress - USDA and Cooperative Programs

Grain

A study of the structure and practices of the grain marketing industry in the Western States was completed that complements similar and completed research for the other grain producing regions. There was no significant trend towards integration among country elevators, flour mills or feed manufacturers in the region. The means utilized by firms within these industries to transport grain and grain products was quite stable over the 4-year study period.

Dairy

As local distinctions break down in fluid markets, milk is distributed over larger areas, bringing previously separate markets into direct competition. In many Federal order milk markets, Class I prices paid to producers in 1965 and 1966 differ from those in other order markets by more than the cost of transportation. Increasing attention must be paid to the geographic alignment of Class I prices. Differences in Class I prices place undue strain on the market structures and market institutions. Reasons for differences in prices range from the difficulty of developing new sales outlets for sources of supply to overt trade barriers of various types. The changes that have been occurring in milk marketing--technological and institutional--make free flow models more applicable and realistic. According to a computer model, free flow of milk between market areas would not require excessive movement

of milk between markets. Rather minor intermarket shipments would bring pricing into alignment.

Poultry

A sample of U.S. egg packers surveyed during 1964-66 sold about 50 percent of their eggs to large retailers, 13 percent to small retailers, 16 percent to wholesalers and brokers, 13 percent to institutional buyers, and 6 percent to breakers. Producers selling to these assembler-packers sold them 88 percent of their eggs, with 6 percent going to retailers, and 2 percent to breakers. Eggs delivered by producers to assembler-packers averaged over 92 percent Grade A or better, less than 2 percent B's and C's, 4 percent checks and cracks, over 1 percent unsized and ungraded, and 0.5 percent discards. Almost 69 percent of the eggs were large or better, less than 21 percent mediums, less than 5 percent small, and the remaining 6 percent unspecified.

Eggs delivered by producers to assembler-packers in the Northeast in 1960-62 averaged 93 percent Grade A or better; in the South,89 percent; and in the Midwest, 85 percent. Average egg quality appears to have increased about 2 percent between 1960-62 and 1964-66, but spreads between various regions still remain. New England plants received eggs grading over 95 percent Grade A in 1964-66; those in Georgia, Alabama, and Mississippi, over 90 percent; and those in Iowa, Minnesota, and South Dakota, under 88 percent Grade A. Seasonal variation in quality is still greater in the Midwest than in the other major egg-producing regions.

Factors related to regional shifts in egg production are: (1) The extent of integration, contracting, and coordination of production, input-supplying, and marketing; (2) size and efficiency of producing and processing units and production density; (3) alternative agricultural and nonagricultural employment opportunities; (4) length and complexity of marketing channels; (5) comparative efficiency of production input-supplying systems and input costs to producers; and possibly, (6) capital availability. Under the impact of these factors, the share of the Nation's egg production has declined in the East and West North Central, North Atlantic, and Mountain regions, and increased in the South Atlantic, South Central, and Pacific regions. Individual states vary from regional trends. The development of geographical self-sufficiency in egg production is not evident in total, and self-sufficiency in local market situations plus a continued movement of eggs from surplus to deficit areas appears a more likely future pattern.

Regional wage rates and the length of the growing season appear to be two important variables in explaining shifts in turkey production among major regions. Longer growing seasons favor Southern producers because they increase production and marketing efficiency. Better utilization of capacity is realized since more flocks can be grown on range, and range rearing is cheaper than confinement rearing. In addition, wage rates in the South are lower than in some other areas. On the other hand, turkey prices in various regions have not changed relative to each other during

the 1955-1967 period. Hence, price alone does not appear to explain regional changes in production.

Increased competition, accompanied by changes in firm organization, industry structure, technology, and product development is having a major impact on the location of the turkey industry and its producing and processing components in the Upper Midwest. Optimum locations for feed suppliers is both affected by and affects in turn the location of turkey production and processing. Moreover, feed supply location is also related to the location of egg, livestock, and dairy production. Programming models are being used to determine future optimum locations in view of all considerations.

Livestock

Data have been collected on the market organizations for feeder cattle, feedlots, processing plants, etc. Three manuscripts relative to organization and structure of cattle feeding and cattle slaughtering in the West have been prepared. Econometric models are being developed for some individual states and for the region in order to measure supply and demand relationships for various classes of cattle. These relationships will also be used in location models for the West. A number of price forecasting equations for feeder cattle and for fed cattle have been estimated and are in the process of being analyzed. A statistical analysis of cost-volume relationships for livestock auction markets in Texas indicated that the most significant economies were achieved by the time a market volume of 40,000 animal units was reached. Costs for various size livestock auction markets in the Northwest show more economies may be realized within a given size auction by operation at or near capacity as compared to economies that might be gained between different size firms. Cost economies were fairly well exhausted at market volumes of 30,000 to 35,000 cattle.

Procurement and marketing practices of cattle feeders in three major areas--Western Corn Belt, Colorado, and California were studied. Emphasis in the sample was given to feedlots of over 1,000 head, but all sizes were included. California and Colorado feedlots tend to specialize in feeding cattle, while Western Corn Belt feedlots often also feed other species of livestock. Western Corn Belt feedlots tended to be much smaller in size, although the number of feedlots exceeded those in California and Colorado. The placement-capacity ratio tended to be higher in Colorado than in the other regions. Order buyers were the most important type of buyer of feedlot cattle in each region. Colorado fed more heifers, while the other regions fed more steers. Feeding periods tended to be shortest in California and longest in the Western Corn Belt. A tendency toward marketing lighter cattle in California and heavier cattle in the Western Corn Belt and Colorado was indicated.

Peanuts

Surveys of peanut producers in the Southwest and Southeast were designed to determine harvesting and marketing practices and costs in the two areas for

use in an interregional analysis of the peanut industry. Major findings of the surveys showed that the average operating rates per acre for most harvest operations were slightly higher in the Southwest than in the Southeast. Average yields per acre in the two areas were nearly identical, 1.2 tons in the Southwest and 1.1 tons in the Southeast. Per acre labor costs for harvesting peanuts were significantly higher in the Southwest. This was due to higher wage rates, averaging from $1.11 per hour for digging and windrowing to $1.17 per hour for combining, while the corresponding wage rates in the Southeast were 78 and 80 cents per hour. Also, labor crew sizes were slightly larger in the Southwest. Drying costs in the Southwest averaged $9.00 per ton compared to $10.22 in the Southeast. Cleaning costs were comparable in the two areas. Farmers in the Southwest hauled their peanuts an average of 17 miles to sell them, considerably farther than the Southeast farmers, whose average hauling distance was less than 10 miles.

An analysis of the peanut shelling industry's utilization response to the pricing mechanism for Virginia-type farmers' stock peanuts has been completed. The results of this study indicate that the shelling industry is quite responsibe to variations in the price differentials among the various farmers' stock kernel grades. Specifically, the analysis indicates that both extra large kernels and other kernels have been underpriced relative to sound mature kernels by the price support program in the past. Appropriate prices would be 10 cents per pound for other kernels and a 5 cent per pound premium for extra large kernels.

RPA 508 - DEVELOPMENT OF DOMESTIC MARKETS FOR FARM PRODUCTS

A. Problems and Objectives

New agricultural products and processes or changes in existing product forms continue to be developed. Determination of the market potential for these new or improved products and processes is essential to management, both private and public, in making decisions relating whether or not to invest funds in various developmental aspects and for guidance in further research programs. Promotion also is a major element in the development of domestic markets for agricultural products. Agricultural commodity groups are spending over $100 million annually to strengthen the demand for their products. Economic evaluation of such efforts are necessary so that the funds are used with maximum effectiveness by these groups and by new groups going into commodity promotion.

Major objectives of the research are to:

1. Determine market potential for new or improved products and processes.
2. Measure the impact of new product developments or changes in existing products on consumption, marketing costs, and farmers' returns.
3. Evaluate alternative advertising and promotional methods.
4. Evaluate role of promotion and advertising in the development of markets for farm products.

B. Progress - USDA and Cooperative Programs

Oilseeds

An evaluation of the market potential for safflower oil and meal for industrial, feed, and food use will be completed in early 1969. Indications are that the industrial use of safflower oil will continue strong in printing inks, paints and artists colors where the non-yellowing characteristic of safflower is especially important.

Continued interest in health and dietary considerations relating to the consumption of fats increases the demand for safflower oil because of its higher degree of unsaturation.

Relatively higher prices for cottonseed and soybean meals for livestock feed is contributing to greater consideration and use of safflower meal by feed mills.

Soy Proteins

Marketing specialists and food technologists are optimistic about the long-range outlook for greatly expanded use of soy protein in foods in both domestic and foreign markets. The problem of an undesirable taste is being overcome in most food uses and the use of soy protein in foods is increasing at an annual rate of 5 to 7 percent. However, present suppliers are few. In 1967, 3 soybean processors produced over 90 percent of the soy flour and grits, 4 manufacturers produced all the soy concentrate, and 3 firms manufactured all the soy protein isolate.

Mohair

An evaluation of mohair's competitive position was completed and an advertising and promotion program was developed for the Mohair Council of America. The Council asked the Department to provide leadership for developing and evaluating this study which was conducted under contract and financed entirely by the Council. A report is being prepared for publication.

Cotton

The first phase of a unique approach to estimate the fiber characteristic requirements of the textile industry was completed. A mathematical model treating market potential as the demand for various fiber properties instead of the demand for individual types of fibers shows great promise. Initially, it is being used to define those characteristics of cotton which limit cotton use in selected markets and providing guidelines on the extent of change in these individual characteristics necessary to significantly influence demand.

Lamb

In a continuing effort to assist farm groups in their promotional efforts and to further refine guidelines on the most effective techniques, an appraisal was made of the impact of low intensity newspaper advertising for lamb in two major metropolitan areas. Results suggest that advertising of such intensity attract and influence only consumers who are acquainted with the product. Nevertheless, the advertising by the American Lamb Council stressing utilization of various cuts and recipes did influence the content of retailer's advertising. Prior to the ALC Campaign, retailer's ads primarily featured price, but during and after the campaign furnished consumer information as well.

Sterilized Milk Concentrate

Institutional markets represent a potential market for sterilized milk concentrate of nearly 3/4 of a billion pounds of fluid milk equivalent per year. Such use of a concentrate would be approximately 1/6 of the present institutional utilization of whole milk, 2 percent milk, skim milk, and cream, and from 8-to-80 percent of evaporated milk use. Favorable comments by institutional users pertain mainly to foods prepared with a concentrate, while unfavorable comments concerned its use as a beverage or as an additive in coffee or on cereals. The main advantages of sterilized concentrate mentioned were long shelf life, savings in refrigeration space, convenience, superiority over powdered milk, and the multiple use of sterilized milk concentrate.

Imitation Milk

Production and marketing of imitation fluid milk products in the Far West indicates that the impact of such sales varies considerably between markets. Indications are that such products will become a permanent competitor for a share of the fluid milk market. Processors and retailers both realize the potential savings in ingredient costs for the imitation milk product and a wider margin.

Dry Whole Milk

The Eastern Utilization Division has spent more than 10 years in developing a beverage quality vacuum foam dried whole milk product. In the spring of 1968, this product was put on sale in 9 supermarkets in Philadelphia suburban area under controlled conditions. Sales were measured by weekly audits. Names of buyers were obtained to followup consumer interviews and determination of repeat purchase patterns. The product was priced competitively with fresh whole milk. A unique feature was the point of sale for the product--in the refrigerated dairy case. In a 12-week period, approximately 280 cases of 24-quart can equivalents were sold. This is an extremely high rate of average sale per store for any new product. The prospects for commercial success for a product of this type appear promising. Data on the consumer evaluation phase is in the analysis stage. One unexpected appeal to consumers of this product was the substantial number of sales to customers who plan to use the product on camping and other vacation trips.

Floral and Nursery Products

Approximately one-third of the adult population made one or more purchases of floral or nursery products during 1966-67. Slightly more than half of these purchases were made at retail florist establishments. One-fifth of the purchases were for funerals or memorials. More than 50 percent of the purchases for funerals or memorials were for arrangements of cut flowers, nearly 15 percent were unarranged cut flowers and another 15 percent

were for artificial products. Nearly 80 percent of the purchases for birthdays and anniversaries were cut flowers.

Purchases of floral and nursery products tend to be more frequent in metropolitan than in non-metropolitan areas. Women are more likely than men to make purchases throughout the year. Purchases are more frequent among whites than nonwhites. Purchases, in general, tend to increase with age, reaching a peak among persons 40 to 49 years old. The higher the educational and income levels, the greater the purchasing activity.

New Crops

A continuing cooperative research effort with ARS is carried out as potential new crops emerge through the agronomic appraisal program. An analysis to assess the economic feasibility of kenaf as a papermaking fiber for the Southeast has been completed. Estimated costs of producing and harvesting kenaf in 10 farming areas of the South were significantly below average costs of rail-roundwood delivered to mills in the region. The analysis indicated kenaf with dry fiber yields of 6 tons or better per acre should be able to compete with corn or soybeans for use of land in most areas, but would be less able to compete with cotton. Results of the analysis appear sufficiently favorable to justify the additional research necessary for full development and commercialization of kenaf as a papermaking raw material.

RPA 509 - MARKETING FIRM AND SYSTEM EFFICIENCY

A. Problems and Objectives

More than $100 billion of consumer expenditures for agricultural products go for marketing, processing, and transportation services. The potential returns to improve efficiency are large but the adjustments within individual sectors must be coordinated with other sectors of the system to optimize results. In addition, improved measures of the performance of the marketing system and its subsectors are vital if these potential savings are to be realized.

Major objectives of the research are to:

1. Develop new measures of market performance.
2. Evaluate changing trends in marketing practices, utilization, and distribution patterns upon costs and efficiency of the individual firm and the marketing system as a whole.
3. Analyze costs and efficiencies of alternative agricultural product marketing and manufacturing systems.

B. Progress - USDA and Cooperative Programs

Wool

Analyses of the wool marketing system are complete. A report was prepared and the work will be terminated in fiscal year 1969. The results indicate that wool producers are largely at the mercy of the marketing system. Only one-third indicated they could accurately judge the quality of their own wool and nearly two-thirds of the sheep producers indicated they knew of no market outlet for their wool other than the one they were presently using. Means of improving the local wool pool and warehousing systems are presented. The National Wool Marketing Corporation and the American Farm Bureau Federation assisted in financing and planning this study and are using the results in formulating their wool marketing programs.

Feed Grains

In order to assist in production planning of feed manufacturers, a composite formula model was developed and is being used commercially for least-costing single feed formulations. A production planning model which will least-cost feed formulations simultaneously taking into account operation restrictions and inventory has also been developed and is being tested by a cooperating feed manufacturer. The latter model is performing well in planning ingredient procurement two and three weeks in advance. These models draw heavily

on previous costs analyses of feed manufacturing and are designed to provide management with a total systems approach to profit planning and cost control.

Ornamentals

More than 1300 woody ornamental nurseries were interviewed in 11 Southern States. Approximately 55 percent of these nurseries were established after 1950; only 13 percent were in business prior to 1930. The average value of sales for all firms in the region was $39,500; the range was from $20,400 for proprietorships to $110,100 for corporations. Broadleaf evergreens are the most important product produced. In 1965-66 more than 50 million broadleaf evergreens were sold by the nurseries interviewed, compared with 42 million deciduous shrubs, 23 million narrow leaf evergreens and 28 million ornamental trees. The estimated value of production of the 1300 nurseries in 11 States was more than $52 million. The leading State was Florida ($17 million), followed by Virginia ($7 million), Texas ($6 million), Tennessee ($5 million), and Alabama ($5 million).

Tobacco

A cost study of tobacco handling, processing, storing and selected services related to storage for flue-cured, Burley, dark air-cured, fire-cured, and Maryland tobaccos is nearing completion. Data in this study were updated to reflect 1968 variable operating costs. Standardized depreciation and interest rates were used.

Average costs for redrying flue-cured tobacco ranged from $7.21 per hundredweight for loose leaves to $8.53 for bundles. Average cost of threshing and redrying was $12.63.

The cost of storing flue-cured tobacco, per hogshead, per month, was 23 cents in storage warehouses operating at 90 percent of capacity.

The sampling cost, which includes removing the hogshead from the tobacco, sampling, and replacing the hogshead was $7.56. Costs of other services include innage, 76 cents; outage, 70 cents; reweight-restore, 87 cents; and reweigh while performing other services, 27 cents.

Market Basket

The retail cost of the market basket of farm-originated foods rose steadily in the first half of 1968. In the second quarter, it averaged 4 percent higher than a year earlier. Most groups of products in the market basket contributed to the rise. Returns to farmers from these products also increased during much of the first half. In the second quarter, they averaged 7 percent higher than a year earlier. Much of the increase resulted from a strong demand for meat animals and short supplies of fresh and processed fruits and vegetables. The spread between the retail cost and returns to farmers in the first half did not change significantly from the level reached at the end of 1967. However, it averaged 2 percent

wider than in the first half of that year. The spread is expected to widen in the second half of 1968.

Food Expenditures

Consumer expenditures for food per person increased significantly in the first half of 1968 and averaged $503 in the second quarter--almost 6 percent higher than in the same period of 1967. These expenditures represented 17.2 percent of disposable income compared with 17.4 percent in the second quarter of 1967. Per capita food expenditures for all of 1968 will be well above those in 1967, although only a small increase is in prospect for the second half. The rise in these expenditures this year has resulted partly from higher prices and partly from substitution of relatively expensive foods for lower cost foods, and purchases of more marketing services with foods.

Labor Productivity

Studies of labor productivity in food distribution based on available census data show that output per man-hour increased about 2.7 percent per year in the 1948-1963 period. This was about the same as the increase for the private nonfarm sector of the economy, but less than for the farm sector. The increase for food distribution was the result of a 2.4 percent per year increase in net output and a small decrease in man-hours. Distribution costs per unit of net output increased 52 percent during the period studied; unit labor costs rose 23 percent; and unit nonlabor costs increased 97 percent. Work is progressing to develop productivity estimates for more recent years to enable a more current appraisal of this performance measure.

Pricing

Contract research found: (1) no substantive evidence that speculation in futures trading for grains causes extreme fluctuation in prices; (2) some cases of insufficient speculation to carry the hedging demands; and (3) no conclusive basis for advocating margin regulation to dampen excessive speculation.

Factor Marketing

Analysis of the inputs into food processing showed that, although agricultural inputs increased in total amount since World War II, other inputs increased at a faster rate. Thus, even with no adverse change in relative prices in the inputs, agricultural inputs were diminishing as a share of total inputs.

Innovations in Food Processing

Food processing innovations are a vital element in changes occurring in marketing with impact on costs, structure, and demand. Research is nearing completion under contract on trends in the development and

potentials of the food dehydration industry, costs of dehydration, and uses of dehydrated foods by the food service industry. Comprehensive analyses are underway to establish if the marketability of perishable products can be improved and the costs-benefits from low-dosage radiation-pasteurization. Nineteen farm and fishery products will be included in the analyses. The work is being carried out through memorandum of agreement with the Atomic Energy Commission, and the Bureau of Commercial Fisheries, and a contract with a private research organization.

Transportation

Universes of shippers, receivers, truckers and truck brokers were accumulated for sampling to collect exempt truck rates. These are to be used in designing and evaluating a scheme for the periodic collection of such rates for the information of shippers, receivers, truckers and researchers. A pretest of mail survey forms revealed major problems of covering a predetermined sample through this method. Personal interviews are now underway with sampled firms.

Rail freight rate indexes of a few agricultural commodity groups showed slight increases (up to a point) in 1967 over 1966, perhaps as a result of the Ex Parte 256 increases authorized in August 1967. However, for all agricultural commodities combined, there was no increase in the index when rounded to the nearest point.

Ocean freight rates for grain continued in 1967 to be quite variable from season to season, particularly around the time of the closing of the Suez Canal by war in the Mideast.

Revisions of certain Interstate Commerce Commission data series used in constructing the food transportation bill required revision of the food transportation bill for recent years. This revision resulted in a lower estimate of the bill for these years than had been published. The bill in 1966 was estimated as $4.8 billion, or 8.8 percent of the total food marketing bill.

New Measures of Market Performance

Despite impressive gains in productivity, and the servicing of the food needs of an expanding population with an amazing array of products for a relatively low percentage of income, the marketing system and its components are subjected to widespread criticism. Existing measures of performance, such as profits, prices, shares of the consumer dollar, either are not fully understood or they represent only the position of segments of the system.

New directions must be sought in order to provide more meaningful intelligence on equity and efficiency issues in the operation of the system as well as to uncover the basic variables which are fundamental determinants of performance. To this end, basic research has been

initiated under contract to examine the adequacy of currently used measures and to conceptualize and determine the feasibility of developing new and more meaningful measures.

Methodological

The development and perfection of research tools and their application to the solution of complex marketing problems are a vital part of a research program. Two significant pieces of work during the year have added to knowledge of the decisionmaking process and made a new technique available in correlation analyses.

(a) A model was developed using the cardinal utility concept in demonstrating how decisions can be reached from a choice of alternative enterprises to maximize returns or reduce risks. The soybean processing industry was used for illustrative purposes and the model gave quantitative content to Allen Paul's prize winning essay. This work provided valuable new insights into the pricing, investment, and risk-taking behavior of marketing firms.

While the specific model deals with the particular conditions in the soybean processing industry, it indicates promise as a technique for more widespread use for decisionmaking as well as a research technique to examine behavioral patterns associated with price spreads in other industries.

(b) The marginal R^2 is a valuable new statistic and the equations for computing it have been perfected and made available for use by researchers. The "Marginal R^2" provides an additive measure of the variance explained by each independent variable in multiple regression analysis. One of the major advantages of this statistic over the others available is that it provides the least complex method of presenting the influence of each variable. This statistic should be quite useful to analysts in gaining greater insights into the nature of the relationship between variables. It also enables the analyst to present his results in a fashion that is more easily understood by the nonmathematician.

Recently, the marginal R^2 was found useful in a study of retail margins for 314 food products. Seven independent variables in a regression equation were found to account for 87 percent of the variation in price spreads (R^2 = .87). Use of the marginal R^2 revealed that the predominant variable was retail price per unit. The marginal R^2 of this variable was .59. That is the separate influence of this variable was sufficient to increase the R^2 from .28 to .87.

It is anticipated that marginal R^2 will be used in the future to determine the separate affects of socioeconomic variables on food expenditures by low-income families. Other possible uses include evaluation of the separate affects, income, price, and other variables have on expenditures for away-from-home eating.

RPA 510 - FARMER BARGAINING POWER

A. Problems and Objectives

The trend toward fewer but larger supply, processing and marketing firms, changing consumption habits and other factors place the farm operator in an increasingly weaker bargaining position. Research is needed to find more effective ways to improve the terms of trade between farming and other sectors of the economy. Government programs at all levels are one means of equalizing bargaining power. Other possibilities include contracts between growers and processors as an alternative to independent production. A thorough understanding of Government supply, control and demand expansion programs and structural changes in the agricultural industry is a prerequisite to effective work in the area of farmer bargaining power.

Major objectives of this research program are to:

1. Identify and compare effects of alternative bargaining approaches including a farm marketing board for a specific commodity.
2. Appraise the applicability of agricultural marketing boards, marketing agreements, advanced contracts, etc., in the United States.
3. Analyses of the degree of competition prevailing between farm-supply firms, and between firms that process and market farm products.

B. Progress - USDA and Cooperative Programs

Poultry Contracts

Grower returns vary widely under the different production arrangements for turkeys, broilers, and table eggs. Returns varied with changes in product and input prices, but many contracts help insulate growers from these changes. Under some cost and price relationships, contracts would be a better alternative than independent production when only short-run returns to labor and management are considered.

With the farm price of broilers at 15 cents per pound (1964-66 average) returns to labor and management would have been higher to contract growers than to an independent grower with feed costs at $85 or more per ton. With feed less than $80 per ton, two of the contracts considered would have given greater returns and three contracts would have returned less than the independent grower.

The 1964-66 farm price of turkeys was 22 cents per pound and at this price an independent turkey grower would have received greater returns than any contract grower until the feed cost was greater than $85 per ton.

At the 1964-66 average egg price of 31 cents per dozen, the independent egg producer would have received more returns for labor and management than contract growers if feed cost less than $84 per ton.

RPA 808 - GOVERNMENT PROGRAMS TO BALANCE FARM OUTPUT AND MARKET DEMAND

A. Problems and Objectives

The problem of oversupply of agricultural commodities remains a critical one for policymakers. Heavy supplies are expected in the food and feed grains' areas, soybeans, and in some animal products. These heavy supplies, despite supply management programs, will depress farm prices and penalize farmers for their productivity. One program of growing importance in the balancing of farm-output and the market demand concerns public food distribution programs. However, as recent events indicate, the effectiveness of these programs in meeting food needs of the poor is a matter of great concern. Research in this area is needed to provide a base of knowledge to assist in making policy decisions that will result in optimum benefits from the resources available and authorized to carry out these programs.

Major objectives of the research are to:

1. Evaluate the impact and benefits of food distribution programs on food consumption and farm income.
2. Appraise the effectiveness of alternative arrangements for administrating food distribution programs at the Federal, State, and local levels.
3. Determine the feasibility of expanding the food stamp plan and the economics of alternative food nutrient sources for food aid programs.

B. Progress - USDA and Cooperative Programs

In connection with the food stamp plan, a comprehensive study under contract has been initiated in a large metropolitan area to examine in depth the extent of program participation, reasons for nonparticipation by the eligible poor, and to establish the socioeconomic characteristics of the poor in order to more effectively adopt program criteria to needs. New approaches to establishing income-expenditure relationships are being used in order to obtain more reliable data than is now available for program use. Further analyses have been made of these relationships from data obtained in a survey of two Mississippi counties. Household size and income were the major variables explaining the level of food expenditures but their joint effect only explained 34 percent of the variation. The low ranges of income dealt with the necessity to maintain a minimum level of food intake regardless of income, possible postponements of purchases and numerous other factors making the establishment of normal expenditures for food for those families in poverty most difficult. Further analyses of

these and new data using the most advanced techniques available to measure the influence of other variables, possibly intercorrelated, will be undertaken.

A survey of the school lunch and other food programs has been undertaken. The Bureau of the Census has collected data for the Department from a nationwide sample of public and private schools on the current status of food services, including availability of each type of service, participation rates, cost to the school, financial assistance, number of needy children and other related information. These data are now being analyzed and will enable an appraisal of the effectiveness of existing programs, as well as indicate problem points which require further research and program redirection.

Exploratory research relating to the economics of alternative food nutrient sources for food aid programs has been carried out. A large and expanding body of technical knowledge concerning nutrition adequacy in diets and knowhow involving new and largely undeveloped sources of protein foods presented in technical papers, symposia and other literature of recent years has been reviewed. Three hypotheses about the food problem and its solution have emerged which merit testing.

1. A low level of income is not always a primary causal factor for poor diets; cultural and educational modalities of an affected society restrain effective utilization of available resources for food and nutrition balancing.
2. U.S. products are at a disadvantage to locally produced raw materials in overseas manufacture and distribution of diet-supplement products.
3. Value added to productivity of labor as a result of adequate protein intake of workers may exceed diet supplement costs to management and may provide justification for free food distribution to workers in certain controlled hourly wage classes.

PUBLICATIONS--USDA AND COOPERATIVE PROGRAMS

1. RPA 501 - Improvement of Grades and Standards

Chapman, W. E., Mullikin, R. A., and LaFerney, P. E., March 1968. Quality and Performance of Pima S-1 and Pima S-2 Cotton Under Different Ginning Conditions, El Paso Area, 1964-65. MRR-803, 13 pp.

Chapman, W. E., Mullikin, R. A., and LaFerney, P. E., March 1968. Effects of Gin Cleaning on Fiber Properties and Spinning Quality, Pima Cotton, 1965-66, With and Without Crusher Rolls. MRR-806, 13 pp.

2. RPA 503 - Physical and Economic Efficiency in Marketing Fruits and Vegetables

Pearson, James L., April 1968. Utilization of the South's Vegetable Processing Capacity. AER-EC-68-5, 48 pp.

3. RPA 504 - Physical and Economic Efficiency in Marketing Field Crops

Coffin, H. G. and Reilly, W. R., September 1968. Rail Freight Rates: Potential Reduction on Corn Shipped to New England. University of Connecticut, Storrs Agr. Exp. Sta. Bul. 407.

Eiland, J. C., July 1968. Marketing Spreads for White Bread. Misc. Publ. 1091, 15 pp.

Holder, Shelby H., Jr., MacCaskill, Oliver, and Shanklin, Edward H., November 1967. Effects of Reclaimed Gin-Loss Cotton on Lint Quality and Spinning Performance. MRR-808, 10 pp.

Holder, Shelby H., Jr., December 1967. Supply and Price Data on Cotton Gin Motes. MRR-809, 24 pp.

Holder, Shelby H., Jr., May 1968. Charges for Ginning Cotton, Costs of Selected Services Incident to Marketing and Related Information, Season 1967-68. ERS-2 (1968), 2 pp.

Smith, Thomas B., June 1968. Marketing Spreads for Soybeans and Cottonseed Oils Used in Salad Dressings. ERS-376, 28 pp.

4. RPA 505 - Physical and Economic Efficiency in Marketing Livestock

Agnew, Donald B., July 1968. "The Pork Chop is Better," Agricultural Situation, p. 8.

Agnew, Donald B., July 1968. "USDA Documents Hog Carcass Improvement," National Provisioner, p. 44.

Anderson, B. A. and Forker, O. D., October 1967. Selected Committee Pricing Schemes in Britain and Denmark. Cornell University, Dept. Agr. Econ. Mimeo., 6 pp.

Anthony, W. E., September 1967. "Packers in the Feedlot," Farm Business Notes. University of Minnesota, No. 498, 3 pp.

Anthony, W. E., January 1968. Structural Changes in the Federally Inspected Meat Processing Industry, 1961-64. AER-129, 20 pp.

Bardwell, E. T., Christensen, R. L., and Storey, D. A., May 1968. Egg Marketing Systems and Practices in New England. N. H. Agr. Exp. Sta. Bul. 497, 30 pp.

Crom, Richard J., February 1968. Heavy Lamb Carcasses--Their Retail Value. LMR-159, 3 pp.

Crom, Richard J., June 1968. Marketing Aids for the Cattle Feeder. MRR-819, 16 pp.

Darrah, L. B., Forker, O. D., and Miller, R. L., May 1968. New York Mercantile Exchange Egg Prices and Urner Barry Egg Quotations. Cornell University, Agr. Exp. Sta. Bul. 1021, 29 pp.

Duewer, Lawrence A., November 1967. "An Examination of Beef and Pork Price Spread Computation Procedures," Marketing and Transportation Situation. ERS-363, pp. 20-25.

Faber, F. L. and Stringer, D. E., April 1968. An Inventory of Market News Reports for Poultry. ERS-374, 33 pp.

Forker, O. D. and Anderson, B. A., February 1968. An Annotated Bibliography on Price Discrimination. Cornell University, Agr. Exp. Sta. Res. Bul. 241, 25 pp.

Hammond, J., Anthony, W., and Christiansen, M., July 1968. "A Look at the Farm-Retail Price Spread," Journal of Marketing.

Jones, H. B., 1967. Decisionmaking, Prediction, and Economic Survival, Jour. Paper No. 215, Georgia Agr. Exp. Sta., 11 pp.

Jones, H. B. and Thompson, J. C., April 1968. "Squared Versus Unsquared Deviations for Lines of Best Fit," Agricultural Economics Research, Vol. 20, No. 2, 6 pp.

Kerchner, Orval G., 1968. Economic Aspects of Flexible Dairy Manufacturing Plants. University of Minnesota, Agr. Exp. Sta. Bul. 487, 62 pp.

Manchester, Alden C., June 1968. Fluid Milk Markets. Number of Handlers and Market Shares, 1950-65. Stat. Bul. 428, 83 pp.

Moede, Herbert H., May 1968. "Substitute Fluid Dairy Products," The Dairy Situation, pp. 30-37.

Rogers, G. B., April 1968. Research on Egg Pricing and Its Implications for Publicly-Sponsored Market News Information Programs. Paper, Southern Marketing Service Workshop, Atlanta, Georgia, 10 pp.

Rogers, G. B., July 1968. Problems in Egg Pricing. Paper, annual meeting Poultry Science Association, College Station, Texas, 9 pp.

Waterman, B. C. and Schrader, L. F., June 1968. Egg Pricing and Contracting Practices of Shell-Egg Processors of Indiana Eggs. Purdue Agr. Exp. Sta. Rpt., 12 pp.

Williams, Sheldon W., September 1967. Some Problems in the Dairy Industry: 5. Summary and Implications. University of Illinois, Dept. Agr. Econ. Bul. 15, pp. 38-40.

Williams, Sheldon W., January 1968. "The Dairy's Dilemma," Dairy and Ice Cream Field. Vol. 150, (4), pp. 38-40, 42, 45.

Voss, L. A., July 1968. What We Have in Egg Pricing. Paper, American Poultry Congress, Cincinnati, Ohio, 6 pp.

5. RPA 506 - Supply, Demand and Price Analysis

Lund, Richard E., Duewer, Lawrence A., Maki, Wilbur R., and Strand, Norman V., February 1968. Characteristics of Demand for Meat by Consumers in Webster County, Iowa. Iowa State University Spec. Rpt. 56, 38 pp.

6. RPA 507 - Competitive Interrelationships in Agriculture

Burke, Ronnie L., May 1968. "Characteristics of Western Corn Belt Feedlots," Minnesota Farm Business Notes, No. 56, 2 pp.

Freeman, Robert E., April 1968. Geographic Pattern of Fluid Milk Prices: A Computer Analysis. MRR-818, 25 pp.

Hanes, John K., July 1967. Structure of Potato Marketing in the Red River Valley. Proceedings, Seventeenth National Potato Utilization Conference ARS, USDA, pp. 38-43.

7. RPA 508 - Development of Domestic Markets for Farm Products

Eley, Cleveland P., August 1968. "Food Uses of Soy Protein." Marketing and Transportation Situation, pp. 27-30.

Havas, Nick, April 1967. A Graphic View of the Retail Florist Industry. MRR-788, 48 pp.

Moede, Herbert H. and Graf, Truman, F., June 1968. Marketing Potential for Sterilized Milk Concentrate in Institutional Outlets. Wisconsin Agr. Exp. Sta. Res. Bul. 271, 32 pp.

Myers, L. H. and Havlicek, J., Jr., 1967. "Some Theoretical Aspects of Short-term Hog Supply," Journal of Farm Economics, 49 (s) 1395-1400.

Powell, Jules V., Raleigh, Stephen M., and Lundquist, Dorothy M., April 1968. Horticultural Specialty Crops - Production and Marketing Trends, 1948-65. Stat. Bul. 422, 72 pp.

Raleigh, Stephen M., July 1968. Consumer Purchasing Patterns for the Goods and Services of Commercial Floriculture in the United States, 1966-67. ERS-382, 7 pp.

Taylor, Reed D., Kohler, George O., Maddy, Kenneth H., and Enochian, Robert V., January 1968. Alfalfa Meal in Poultry Feeds--An Economic Evaluation Using Parametric Linear Programming. AER-130, 19 pp.

Trotter, W. K., October 1967. "Economics of Kenaf for Pulp on the South--A Preliminary Review," Proceedings of Kenaf Conference, Gainesville, Florida, 19 pp.

Van Dress, M. G. and Freund, W. H., October 1967. Types of Food Service Offered and Number of Outlets in the Food Service Industry. ERS-359, 6 pp.

Van Dress, M. G. and Freund, W. H., February 1968. The Food Service Industry: Its Structure and Characteristics. Stat. Bul. No. 416, 370 pp.

Van Dress, M. G. and Freund, W. H., May 1968. "Dimensions of the Food Service Industry," Marketing and Transportation Situation, pp. 11-14.

8. RPA 509 - Marketing Firm and System Efficiency

Ballinger, Roy A., Second Quarter 1967. "Economic Research and World Sugar Problems," Agricultural Science Review, Vol. 5, No. 2, pp. 23-28.

Bird, K., Arthur, H. and Goldberg, R., June 1968. Technological Front in the U.S. Food and Fiber System. Background paper, Food and Fiber Commission, Graduate School of Business Administration, Harvard University, 64 pp.

Clement, W. E., November 1967. Outlook for Marketing Services and Implications for Food Prices. ERS-364, pp. 26-31.

Developments in Marketing Apreads in 1967. 1968. Spec. Rpt. to Congress.

Findlay, J., Harp, H. H., and Wesson, W., August 1968. "The Bill for Marketing Farm Food Products," Marketing and Transportation Situation, pp. 11-19.

Gale, H., November 1967. "Cardinal Utility and Decisionmaking in the Soybean Processing Industry," Journal of Farm Economics, Vol. 49, No. 4, pp. 942-947.

Gale, H. and Van Horn, T., February 1968. Labor Productivity and Food Distribution. ERS-372, pp. 12-20.

Harp, H. H., October 1967. "Use of Marginal R^2 and Partial r^2 in Multiple Regression Analysis," Agricultural Economics Research, Vol. XIX, No. 4, pp. 103-110.

Hutchinson, T. Q., December 1967. "Ocean Freight Rate Highlights," Foreign Agricultural Trade of the United States, pp. 15-18.

Hutchinson, T. Q., January 1968. Heavy Grain Exports in Voyage-Chartered Ships: Rates and Volume. MRR-812, 34 pp.

Hutchinson, T. Q., May 1968. "Ocean Freight Rate Highlights," Foreign Agricultural Trade of the United States, pp. 25-27.

Hutchinson, T. Q., October 1968. "Ocean Freight Rate Highlights," Foreign Agricultural Trade of the United States, pp. 75-77.

Nelson, Paul and Chumley, Toledo, February 1968. "The Changing Input Structure of Selected Food Processing Industries: Agriculture's Declining Share," Marketing and Transportation Situation, pp. 21-31.

Robert R. Nathan Associates, Inc., December 1967. Margins, Speculation and Prices in Grains Futures Markets. Unnumbered.

The Marketing and Transportation Situation, published quarterly.

Vosloh, Carl J., Jr., March 1968. Costs and Economies of Scale in Feed Manufacturing. MRR-815, 66 pp.

9. RPA 510 - Farmer Bargaining Power

Gallimore, W. W. and Vertrees, J. G., February 1968. A Comparison of Returns to Growers Under Contract-Operating Independently. MRR-814, 48 pp.

Gallimore, W. W. and Vertrees, J. G., May 1968. "Contract Arrangements in the Poultry Industry," Marketing and Transportation Situation, pp. 15-18.

☆ U.S. GOVERNMENT PRINTING OFFICE : 1968 341-752 (ARS-66)